AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claims 1-16 (Canceled)

17. (Currently Amended) A method of extracting a radial velocity characteristic of a target from one or more coherent radiation pulse bursts comprising the steps of:

(a) receiving radiation echo returns of the pulse bursts from a remote scene;

(b) processing the received echo returns into in-phase (I) and quadrature (Q) components;

(c) measuring the I and Q components at intervals to provide sampled data;

(d) modelling the sampled data by applying a predetermined function comprising a helix;

(e) modifying the predetermined function based on phase and amplitude to optimize the fit to the sampled data as a function of velocity;

(f) determining the target radial velocity in ~~dependence upon said modified predetermined function~~ relation to the pitch of the helix, and

(g) outputting the determined target radial velocity.

18. (Currently Amended) A method as claimed in Claim 17 wherein step ~~(d) comprises fitting a curve to the sampled data and~~ step (e) comprises optimising the fit of the **[[**curve**]]** predetermined function to the sampled data in a least squares fashion.

19. (Previously Presented) A method as claimed in Claim 17 wherein a model of clutter return is provided for use in steps (d) and (e).

20. (Previously Presented) A method as claimed in Claim 19 wherein the model of clutter return is a low order polynomial function in I and Q.

21. (Previously Presented) A method as claimed in Claim 17 further comprising the step of extracting target amplitude from the sampled data in dependence upon said modified predetermined function.

22. (Previously Presented) A method as claimed in Claim 17 further comprising the step of extracting range ambiguity from the sampled data in dependence upon said modified predetermined function.

23. (Previously Presented) A method as claimed in Claim 17 further comprising the step of extracting target azimuth from the sampled data in dependence upon said modified predetermined function.

24. (Previously Presented) A method as claimed in Claim 17 wherein the echo returns are measured at non-equi-spaced intervals.

25. (Previously Presented) A method as claimed in Claim 17 wherein the pulse bursts are transmitted at a frequency which is changed between successive pulses.

26. (Previously Presented) A method as claimed in Claim 25 wherein each pulse burst consists of multiple pulses transmitted at non-constant pulse repetition interval bursts.

27. (Previously Presented) A method as claimed in Claim 25 wherein the pulse bursts are internally coherent and mutually incoherent.

28. (Previously Presented) A method as claimed in Claim 17 further comprising the step of carrying out conventional Moving Target Indication/Moving Target Detection filtering and target detection before applying a predetermined function, as in step (d), to the I-Q returns.

29.-38. (Cancelled)

39. (Currently Amended) A method as claimed in claim 1 **[[**37**]]** further comprising the step of extracting target amplitude from the sampled data, the target amplitude being extracted in relation to a radius of the helix.

40. (Currently Amended) A method according to claim 1 **[[**37**]]** comprising the use of a plurality of coherent radiation pulse bursts, the method further comprising the step of estimating target range ambiguity by modifying the predetermined function based on an assumption that one or more initial echo returns do not lie on the helix.

41. (Previously Presented) A method according to claim 40 further comprising the step of extracting an ambiguity order based on the number of first received pulse signals lying on the axis of the helix.

42. (Currently Amended) A method according to claim 1 **[[**37**]]** wherein said remote scene comprises a target together with clutter and the sampled data relates to the sample and clutter.